

Ryan A. Grady, Charge Harbor LLC

COULOMB TECHNOLOGIES CHARGEPOINT™ NETWORK



Keeping Perspective . . .



Keeping Perspective . . .



Where can I plug in my vehicle?



Understanding . . .

- ⦿ The Charging Stations – “ChargePoints”
- ⦿ The ChargePoint Network
- ⦿ The Federal Programs – ChargePoint America
- ⦿ Integration into you campus



CHARGE HARBOR

About Coulomb Technologies

- ◉ **Pronunciation:** koo-lom
- ◉ **Name Origin:** Charles-Augustin de Coulomb
- ◉ **Definition:**
1 Ampere = 1 Coulomb / sec
1 Coulomb = 6.24×10^{18} number of charge particles
- ◉ **URL:** www.coulombtech.com
- ◉ **Founded:** September, 2007
- ◉ **Mission:** To Fuel the Electric Transportation Industry
- ◉ **Genesis:** Putting money down for purchase of a Tesla and wondering where to plug-in when running out of battery charge
- ◉ **Key IP:** Marriage of networking technologies with electric fueling stations to solve issues relating to electricity when being used as a transportation fuel



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Levels, Plugs, & Cords:

Level I
120 VAC, 12amp



Level II
240 VAC, 32amp



J1772 Standard



Level III
480 VAC, 70amp







**Level III SAE
Plug Standard:
TBD**

Outdoor-rated EV Charge Stations:

Level 1 <i>Model 1000 series</i>	Level 2 <i>Model 2000 series</i>	Level 1 & 2 <i>Model 2100 series</i>	Level 3 <i>Model 3000 series</i>
			

Mounting options:

Level I 120 VAC, 12amp	Level II 240 VAC, 32amp	Level I & II	Level III 480 VAC, 125amp*
			

Standard Features:

Hardware Features

- RFID Reader
- CDMA or GPRS Modem (1 unit in a cluster)
- 802.15.4 Radio and Zigbee protocol support
- Bi-Directional, Utility Grade Power Measurement Meter (V2G ready)
- Personnel Protection (GFCI, over current protection, plug-out detection)
- Vacuum Fluorescent Display
- Power Saving Mode

Security and Liability Limiting Features

- Lock and release security cords to avoid cord theft (110v Level 1)
- Outlets and plugs de-energized unless user is authenticated and cord is plugged into vehicle

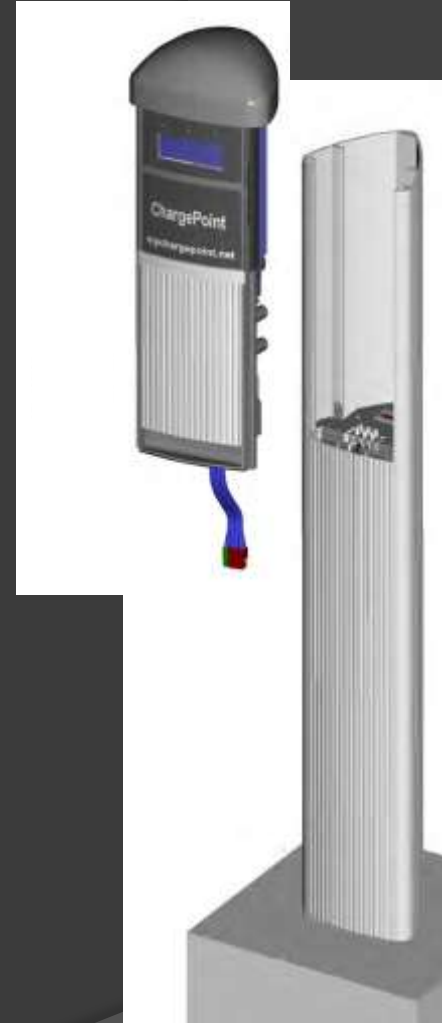
Level 2 Charging with SAE J1772 Connector

- Will be shipping May 2010
- Coulomb will support Level 2 charging up to 240 Volts, 80 Amps when vehicles support it



Servicing ChargePoints

- ◉ Modular design
- ◉ Head unit is easily field replaceable
 - Body is a metal extrusion with a small number of wires and connectors
 - Head unit has all of the logic and complexity
 - Head unit is transferable to the different bodies
 - Head unit replacement takes less than 15 minutes to replace
 - Do not need to be electrician to do a change out, or an IT specialist to bring the replacement unit up on the network.



Charge authorization:



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Charge authorization:



- Coulomb ChargePass
- Call 24 hr operator and instantly authorize
- PayWave Credit Card
- Other forms to come...



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Charge authorization:

VISA PAYWAVE View TV Comm


Issues That Offer Visa payWave
Find Visa payWave Merchants
Visa Micro Tag
FAQ



Learn More >
Stay in control—with Visa payWave
 [View the Visa payWave demo >](#)

Introducing a new wave of ease and convenience
Visa payWave is a new payment feature that lets you check out faster since you don't need to fumble for cash. With Visa payWave, you simply wave your Visa card in front of a secure reader, and you're on your way. Most of the time, a signature is not required for purchases under \$25, plus, you retain control of the card during the transaction, which reduces the risk of fraud.

Over 32,000 retailers from 20 top brands accept Visa payWave payments, and the list is rapidly growing. Visa payWave makes it simple to save time every day—at quick service restaurants, drugstores, movie theaters, convenience stores, and more.

Just look for this symbol at checkout: 



Network connected



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Network connected

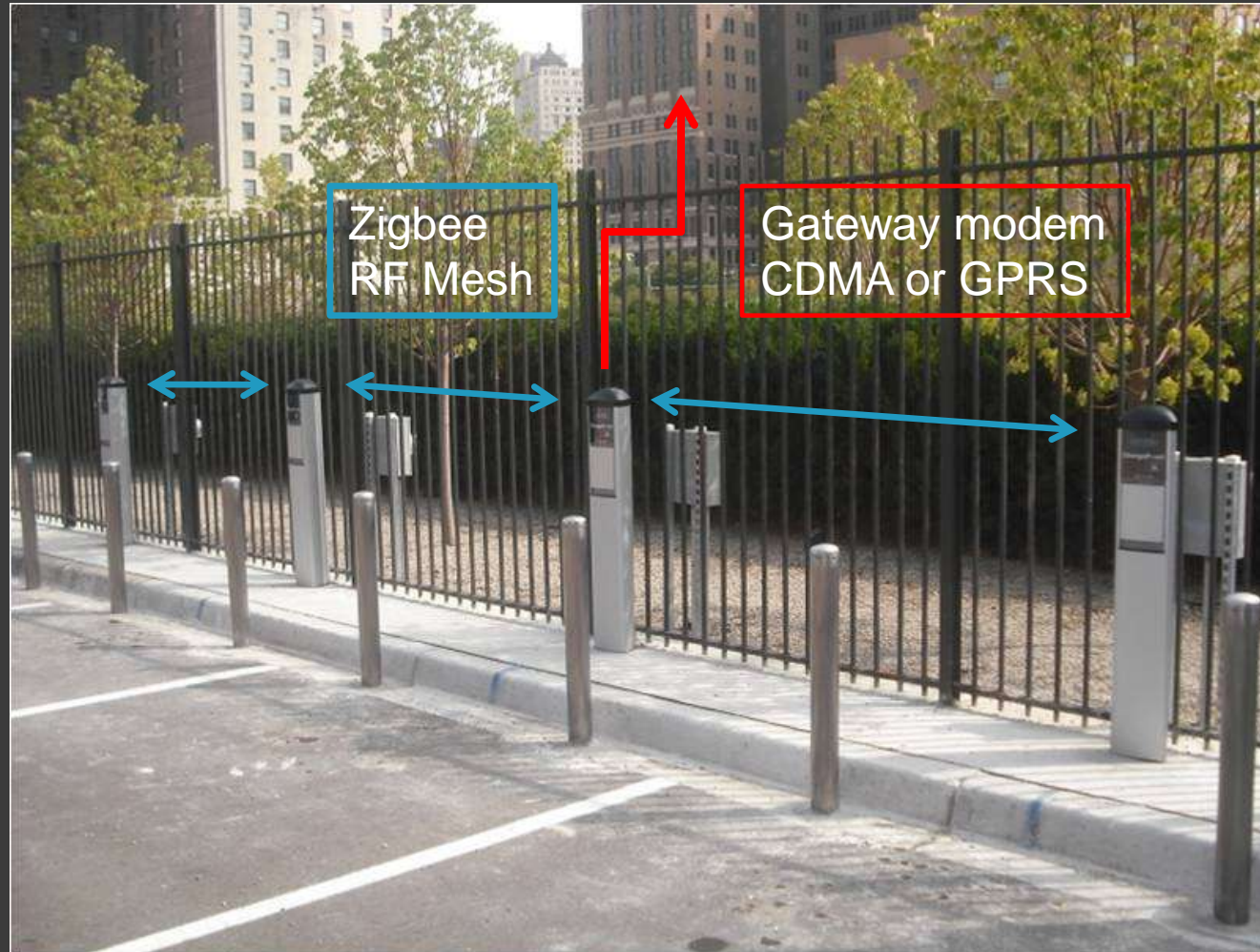


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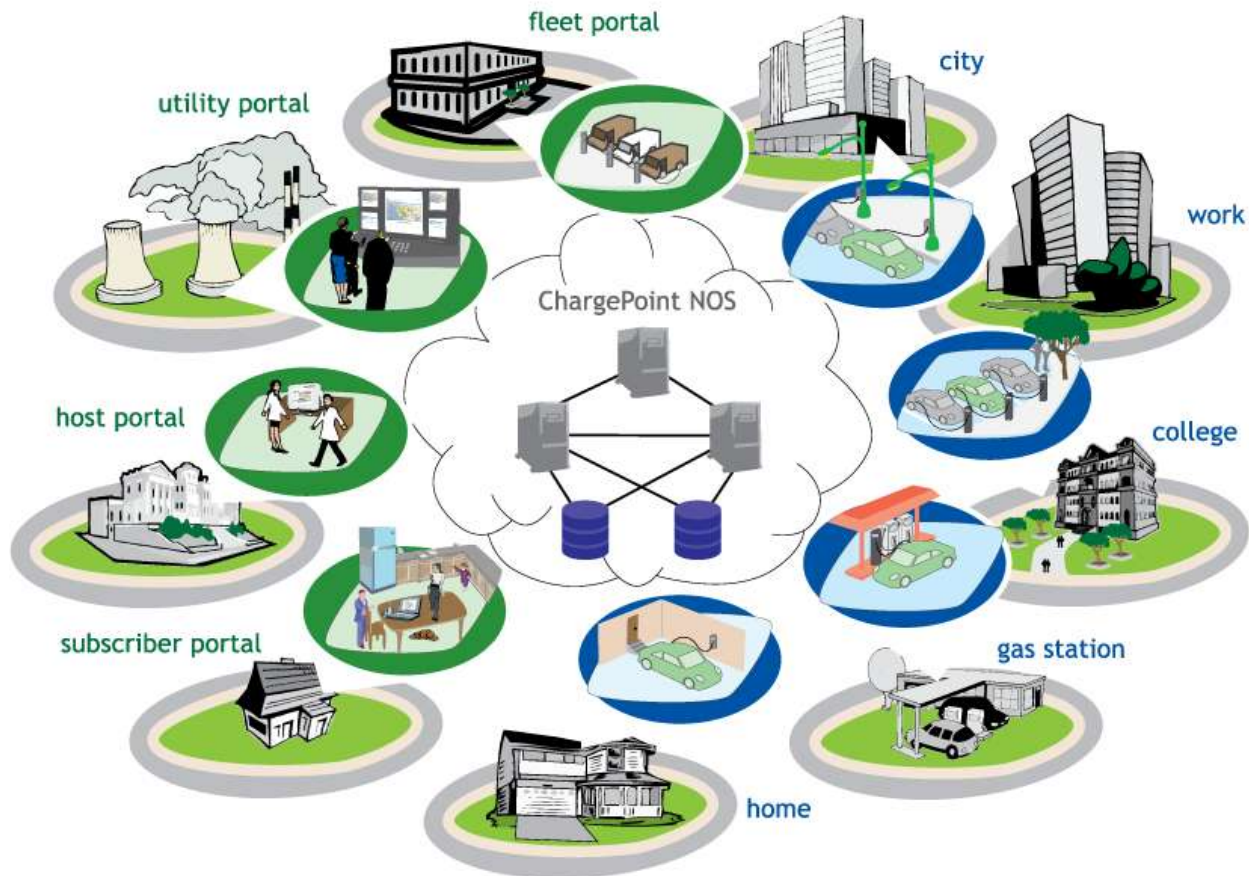


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Network connected



Coulomb Technologies ChargePointSM Network



Department of Energy Program:



ChargePoint America

- ◉ Department of Energy Award DE-EE0003391
 - \$ 37 M Project - \$ 15 M DOE - \$ 22 M Match
- ◉ All Level II charging stations
 - CT-2100 w/ CC and Locking Holster
- ◉ 9 city partners (regions)
- ◉ Approximately 4,600 stations
 - 2,000 Home Stations
 - 2,600 Public Stations
- ◉ 18 month program ending 10/31/2011
- ◉ Data Collection Phase ends 10/2013



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ChargePoint America

- Demonstrate the viability, economic and environmental benefits of an EV charging infrastructure
- Roll out an infrastructure for EV drivers to facilitate a rapid increase in the use of Electric Vehicles
- Provide EV charging stations for public, commercial and residential locations to encourage consumers to buy Electric Vehicles
- Coordinate Stakeholders and OEM EV deployments to maximize charging station infrastructure usage
 - Public sites with high potential for usage by program vehicles
 - Geographic boundaries: 70mi radius
- Collect Data from the project to assist in formulating long term national deployment plans



CHARGE HARBOR

Benefits: GHG, Rule 2202 AVR, LEED Points

- **Immediate Reductions in Reportable Facility Greenhouse Gas (GHG) Emissions**
 - An employee commuting 30 miles roundtrip to campus five days per week in a 2005 Ford Explorer generates a weekly GHG of 82.6 kg/CO₂e. The same commuter in an Electric Vehicle would generate a weekly GHG of 24.63 kg/CO₂e (calculations based CCAR and on CAMX/CA).
- **Rule 2202, improvement in Average Vehicle Ridership (AVR)**
 - Entities with +250 employees must report commute Average Vehicle Ridership (AVR) to the South Coast Air Quality Management District (SCAQMD). Electric Vehicle commutes are treated as though the employee walked to work.
- **LEED Points – New Construction – 3 points**
 - Sustainable site, Credit #4.3 – Alternative Transportation, Alternative Fuel Refueling Stations.
 - The project electrical contractor must install alternate fuel refueling stations for 3% of the total vehicle capacity at the site. See LEED 2009 for New Construction & Major Renovation, page 8.

If you would like to better understand . . .

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THANK YOU!



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